

REMARKS

Summary of the Office Action

Claims 14 and 20 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

Claims 11-13 and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 409102568 A to Hayashi et al. in view of DE 3436545 to Zengerle, and either JP 408181392 A to Kimura et al. or US 4,791,634 to Miyake.

Claim 14 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 409102568 A to Hayashi et al., DE 3436545 to Zengerle and JP 408181392 A to Kimura et al. and further in view of GB 1597829 A to Bell et al.

Claims 17-19 and 22-23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 409102568 A to Hayashi et al., in view of DE 3436545 to Zengerle, either JP 408181392 A to Kimura et al. or US 4,791,634 to Miyake, and in view of GB 1597829 A to Bell et al.

Claim 20 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 409102568 A to Hayashi et al., DE 3436545 to Zengerle, either JP 408181392 A to Kimura et al. or US 4,791,634 to Miyake, and US 6,144,683 to Floyd and further in view of GB 1597829 A to Bell et al.

Claims 15 and 21 stand objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent from including all of the limitations of the base claim and any intervening claims.

Summary of the Response to the Office Action

Claims 11, 17 and 18 have been amended. Claims 13, 14, 19 and 20 have been cancelled without prejudice or disclaimer. Accordingly, claims 11, 12, 15-18 and 21-23 are presently pending.

All Claims Comply with 35 U.S.C. § 112

Claims 14 and 20 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. More specifically, the Office Action alleges at page 2 that the term “elastic” is not disclosed with regard to the “insulating members” recited in previous claims 14 and 20. By way of the foregoing amendment, the “insulating members” feature previously recited in claims 14 and 20 has been respectively amended into independent claims 11 and 17. The Office Action alleges at page 2 that the term “elastic” is not disclosed with regard to the “members” recited in previous claims 14 and 20. The Office Action also asserts that “Only a material selection is indicated, namely: rubber.” Applicants respectfully assert that rubber is a well known as an elastic material. However, in the interest of advancing prosecution, the “members” recited in previous claims 14 and 20 are now referred to as “rubber

insulating member[s]” in independent claims 11 and 17, as amended. Accordingly, Applicants respectfully submit that the 35 U.S.C. § 112, first paragraph, rejection of claims 14 and 20 is now moot and not applicable to independent claims 11 and 17, as amended. Thus, Applicants respectfully submit that the withdrawal of the 35 U.S.C. § 112, first paragraph, rejection of claims 14 and 20.

All Claims Comply with 35 U.S.C. § 103

Claims 11-13 and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 409102568 A to Hayashi et al. in view of DE 3436545 to Zengerle, and either JP 408181392 A to Kimura et al. or US 4,791,634 to Miyake. Claim 14 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 409102568 A to Hayashi et al., DE 3436545 to Zengerle and JP 408181392 A to Kimura et al. and further in view of GB 1597829 A to Bell et al. Claims 17-19 and 22-23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 409102568 A to Hayashi et al., in view of DE 3436545 to Zengerle, either JP 408181392 A to Kimura et al. or US 4,791,634 to Miyake, and in view of GB 1597829 A to Bell et al. Claim 20 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 409102568 A to Hayashi et al., DE 3436545 to Zengerle, either JP 408181392 A to Kimura et al. or US 4,791,634 to Miyake, and US 6,144,683 to Floyd and further in view of GB 1597829 A to Bell et al. To the extent that the Examiner may consider these rejections to apply to amended claims 11 and 17, and claims 12, 15, 16, 18 and 21-23, the

rejections are traversed as being based upon references that neither that neither teach nor suggest, either singly or combined, the novel combinations of features clearly recited in the claims.

Applicants respectfully submit that the combinations respectively recited in claims 11 and 17, as amended, generally have the features of (1) the capability of being able to apply a voltage to a semiconductor laser device, such as an LD array, within a water-cooling type heat sink, (2) preventing water leakage from the heat sink using a rubber insulating member. More particularly, the combinations respectively recited in claims 11 and 17, as amended, set forth an injected water-cooling type heat sink in which the cooling medium (water) is pressurized and injected into an area on which the semiconductor device is mounted in order to perform the cooling of the device with high efficiency. To prevent water leakage at both the supply port and the discharge port, an insulating rubber member is positioned around the supply port and the discharge port of a heat sink so that the pressurized water will not cause a short circuit.

Hayashi et al. and Zengerle do not disclose the use of a rubber insulating member. As pointed out in the Office Action, Hayashi et al. and Zengerle disclose a water-cooling type heat sink, Kimura discloses the supply of voltage to LD through a heat sink, and Bell et al. discloses an insulating member. However, the heat sink disclosed in Kimura is not a water-cooling type heat sink. Further, the heat sink disclosed in Bell et al. is not a water-cooling type heat sink. Therefore, Applicants respectfully submit that there is no teaching or suggestion in either Kimura or Bell et al. of positioning a rubber insulating member around the supply port and the

discharge port of a heat sink. Neither Miyake nor Floyd teach or suggest positioning a rubber insulating member around the supply port and the discharge port of a heat sink for preventing water leakage. Further, Applicants respectfully submit that none of the applied references discloses an injected water-cooling type heat sink. Although Hayashi et al., Miyake and Zengerle disclose a water-cooling type heat sink, the heat sinks of Hayashi et al., Miyake and Zengerle are not an injected water-cooling type heat sink.

Applicants respectfully assert that none of the applied references, whether taken singly or combined, teach or even suggest positioning a rubber insulating member around the supply port and the discharge port of a heat sink in an injected water-cooling type heat sink in combination along with the other features recited in independent claims 11 and 17. Moreover, dependent claims 12, 15, 16, 18 and 21-23 are allowable over the applied references of Kimura, Bell et al., Hayashi et al., Miyake, Floyd and Zengerle for at least the same reasons as discussed above with regard to independent claims 11 and 17, as amended, and for the additional features that they recite. Accordingly, Applicants respectfully request withdrawal of all rejections under 35 U.S.C. § 103.

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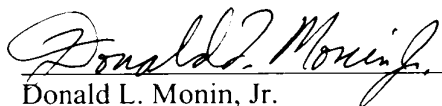
CONCLUSION

In view of the foregoing, Applicants respectfully request reconsideration and the timely allowance of the pending claims. Should the Examiner feel that there are any issues outstanding after consideration of the response, the Examiner is invited to contact the Applicants' undersigned representative to expedite prosecution.

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under 37 C.F.R. 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

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Dated: November 14, 2003

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